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The Prevention *of* Accidents

BY
FERD. C. SCHWEDTMAN

Chairman, Committee for Accident Prevention and Workmen's
Compensation, National Association of
Manufacturers



An Old Emblem With a Timely Purpose

An illustrated address delivered at Sheffield Scientific School
of Yale University, February 11, 1914



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By Ferd. C. Schwedtmann

Chairman, Committee for Accident Prevention and Workmen's
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“**W**ORK ACCIDENTS,” and “Industrial Accidents” are often used as synonymous terms in the discussion of the safety movement. It is, however, more generally recognized every year that accidental industrial injuries cover less than one-half of accidental *work* injuries. Industries are responsible for a great many preventable accidents but a National Safety Campaign must, in order to succeed, cover also the large number of preventable accidents which investigation discloses upon farms, public highways, city streets and even in our homes. Many of these must be classified as *work* accidents.

The movement for preventing accidental injuries, also called the “Safety First” Movement, concerns one of the most important phases of the broad conservation movement, which has taken hold of the United States in recent years. Fortunately we are realizing in time the lessons other countries have had to learn before us, that even a nation abundantly blessed with natural resources cannot go on wasting these as we in the United States have done in the past.

The tendency of the twentieth century is toward enlightened efficiency. The progressive agriculturist does not, as of yore, exhaust his soil and reduce his yield per acre by indiscriminate repetition or bad tilling but doubles and triples his crop upon the same acreage by scientific rotation and efficient cultivation. The progressive doctor keeps his patients from being sick, the successful lawyer keeps his clients out of court and the successful manufacturer, engineer and merchant devote much time and energy to the prevention of waste in every part of their business.

It requires no argument to realize that *human* preservation is more important than conservation in all other directions. However desirable may be the perpetuation of soil, stream and forest, it is secondary to maintenance of human life and limb and to the protection of the self-respect and earning capacity of our people. While humane considerations are naturally and properly the most important in dealing with this subject, *economic* inducements are not wanting.

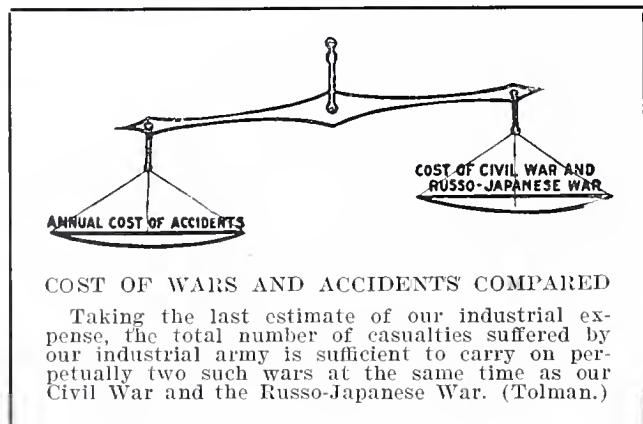
Professor Irving Fisher gives in Bulletin No. 30 of the Committee of One Hundred on National Health, two hundred and fifty billion dollars as a minimum estimate of the vital assets of the United States in 1907, which worth, he states, is from three to five times the value of all other resources of the United States. He asserts further that of the estimated annual loss of three billion dollars due to sickness, accident and death, one-half or one and one-half billion dollars is preventable.

Two other kinds of losses, namely those due to fire and sickness, are so closely interwoven with losses due to accident that it is impossible to separate the three at all times. I shall, however, confine my remarks to losses by accident, as far as practicable.

An address, illustrated with stereopticon views, delivered at the Sheffield Scientific School of Yale University, February 11, 1914.

The following statements from various authoritative sources give us a better comparative idea of losses than mere figures:

"A special inquiry by the United States Geological Survey to determine the fire waste in the United States for 1907 included nearly five thousand cities, rural communities and villages. In



comparison with European fire loss ours is from five to eight times greater. We are paying a preventable tax annually of 366 millions, enough to build one Panama Canal every year.

The buildings consumed in 1907, if placed on lots of sixty-five foot frontage, would line both sides of a street from

Chicago to New York. A person journeying along this street of desolation would encounter at every thousand feet an injured person, and at every three-quarters of a mile he would see the charred remains of a human being, and when burned out at the end of a year the fire would begin all over again on a street of even greater length."

The comparisons appear so startling that we might right here get down to definite figures as far as the limited statistics of the United States permit.

The upper chart on page 4 charging 10.4 per cent, of all fatalities to accidents, is from the accurate but limited records of an American insurance corporation. It is probably as good as anything available in the United States. German statistical records, which are very complete, charge 0.8 per cent. of all fatalities to accidents. (See p. 4.)

Systematic schemes for preventing accidents are not new in the United States. Some large employers have had efficient systems for a number of years, but efforts were not sufficiently widespread and, as a national movement, accident prevention was in the United States up to a few years ago

TEN YEARS' WAR LOSS COMPARED WITH ONE YEAR'S ACCIDENT LOSS



During the past ten years we have had two wars—the Spanish and the Philippine, and the aggregate loss of killed and wounded in the two was less than six thousand men, while the number killed and wounded in our industrial army during the same period, according to lowest estimates, was more than 5,000,000; that is, for every man killed or wounded in war, "victories of peace" have cost us 875 men killed and wounded. (Tolman.)

far behind other industrial nations. American statesmen, employers, economists, insurance experts and humanitarians of all classes have called attention to the need of greater and more concerted action and much headway has been made in the last three years.

The present time finds the people of our country far more active

in accident prevention than any past period. This activity will continue and increase for years to come, and those of us who have had the opportunity to investigate this subject in European countries believe that we are gaining headway and that within a few years will overtake some of the nations who have preceded us in the movement from fifteen to twenty-five years.

CIVIL WAR HUMAN LOSS COMPARED WITH
RAILWAY ACCIDENTS



The six bloodiest battles of the Civil War were Gettysburg, Spottsylvania, Wilderness, Antietam, Chancellorsville and Chickamauga. The total number of killed, wounded and missing in these six battles aggregated less than 105,000 men while the number killed and injured upon our railways during the year ending June 30th, 1906, were 108,324. (Tolman.)

Speaking particularly of work accidents, the increased safety activity in the United States during recent years is in my opinion due to a large extent to the growth of workmen's compensation legislation. Laws of this kind have now replaced in twenty-four States the old and cruel employers' liability system. Aside from the close relationship of safety and compensation, two other important facts have impressed themselves strongly upon my mind during my investigations of this subject here and in European countries.

1st. The nations have made the best headway in the direction of Safety in which responsibility for accident prevention has been placed directly upon the shoulders of employers or employes associations.

2nd. And most important, success in preventing accidents is impossible without enlightened, constructive co-operation between government, employers, wage workers and the general public.

Let me here repeat a statement which I have frequently made in my committee's reports and in public addresses:

"Remember that the most important factor in this endeavor is the right spirit. Without a spirit of progressiveness, without co-operation between the officers and members of organizations, without harmonious co-operation between yourself, your superintendents, foremen and workmen, it is useless to attempt

AN APPALLING RECORD

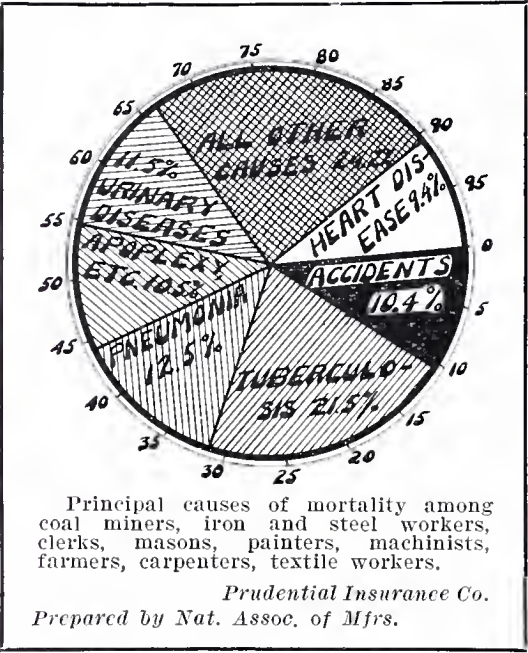
35,000 workmen are killed in industrial accidents each year or one every 15 minutes of every day in the year and 2,000,000 workmen injured or one for every 16 seconds.

CHAS. C. MCCORD
INTERSTATE COMMERCE COMMISSION

a campaign for safety. We manufacturers of the United States of America have a reputation for ability, energy and initiative all over the world and we cannot, we must not fail to make good here."

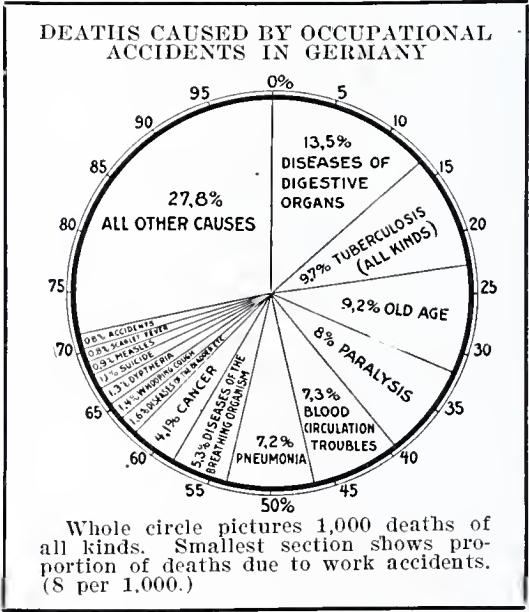
Books, ample in number, can be found now to prove these conclusions and it would take too long here to go into the subject beyond a mere broad statement.

It is now five years that the National Association of Manufacturers has had a special committee handling the subjects of accident prevention and workmen's compensation and it has been my privilege to serve as Chairman of this Committee from the beginning up to the present day. Numerous pamphlets have been prepared from time to time, a monthly illustrated Safety Bulletin is also issued regularly, hundreds of safety lantern slides, traveling exhibits and special motion picture films have been prepared, all of which material is at your disposal for the asking.



(See reference on page 2.)

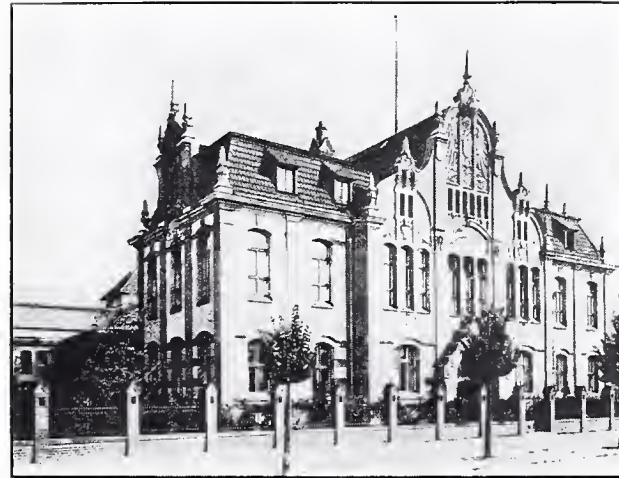
Our Association was the first organization of employers in the United States to take this subject up systematically. We have found ninety-five per cent. of our thousands of members located in all States of the Union in hearty accord and it has been found difficult to supply competent safety engineers in sufficient numbers to answer the demands of our people. Naturally and properly the members of our Association, being all engaged in industrial pursuits, have devoted nearly all their efforts to prevention of industrial accidents. While much has been accomplished, a great deal more remains to be done. If I were to go into detail considerations of our Association's campaign for preventing industrial accidents, I would have to exclude all else or speak at undue length. I have devoted several pamphlets and books to industrial accidents, which may be had from Association Headquarters.



(See reference on page 2.)

ers for the asking, and I think it best to deal in this talk only with the various phases of the whole subject in a broad and general way.

I am glad to see that many important organizations and corporations have since followed our lead and quite a number of these are now working in co-operation with each other through the National



Permanent Accident Prevention Institute at Berlin, Germany, costs Government more than One Million Dollars.

Council for Industrial Safety, which organization in turn is establishing local "Safety Councils" in many cities.

An important present effort in the safety movement, worthy of the support of every good citizen, consists in a Bill that is now before the United States Congress. It provides for the establishment of a special bureau of safety and for the building of a National Safety Museum in Washington, such as exists in Berlin, Vienna, Paris, Munich, Zurich, Amsterdam, Budapest and other European cities. The American Safety Museum, located in New York City, has done much good pioneer work, but Government aid is required to establish a museum worthy of our Nation and able to establish the standards and provide the statistics which are so far sadly lacking in our national safety campaign.

Progressive manufacturers are aiding all these efforts and, speaking for the National Association of Manufacturers, I ask every good man and woman to aid us in making this safety campaign more effective and more general.

The trend of public opinion toward the safety movement is indicated by many favorable editorials and cartoons of the types shown on page 6.

Accident hazards of various occupations have not yet been sufficiently investigated in the United States to give us a demonstrable picture. I can, therefore, give only a chart compiled from German statistics, shown at the top of page 7.

The hazard of farming (11.1 per cent.) which according to this chart is greater than the average of the industries (9.5 per cent.),

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It was an important event when, on October 4, 1912, a National Council was formed for the prevention of accidents and the promotion of safety in the industries. More than 500 delegates were present and the membership of the new organization will be many thousand strong in a short time. Annual safety meetings are planned and a great International Safety Congress is scheduled for the San Francisco Exposition.

FIRST COÖPERATIVE SAFETY CONGRESS
HOLDING THE 10th SEP 30th OCT 1912
ASSN. of Insur. & Fire, Life, & Accident Insurers
100 N. W. 2nd St., CHICAGO

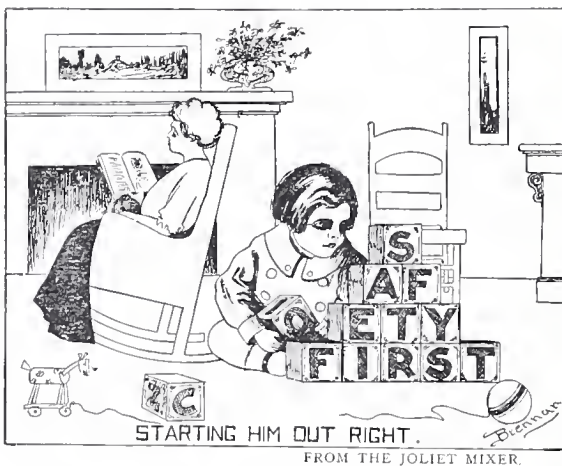
THE GREAT HELL



The First Safety Committee was a matter of necessity, so each safety committee is to any safety organization. (Courtesy of "Colliers" and Philadelphia "North American.")



All accidents should point toward Safety First and be a further incentive toward aiding in this most important movement. An example how the Public Press can aid in stimulating a public interest and in keeping the idea in the minds of all. (Courtesy of "The Evening Press," Grand Rapids, Michigan.)



The safety movement is truly an educational problem and seeds of safety cannot be sown too early in life. Safety should be taught in the public schools, instilling in the child proper spirit of carefulness and caution. (Courtesy of the Joliet "Mirror.")



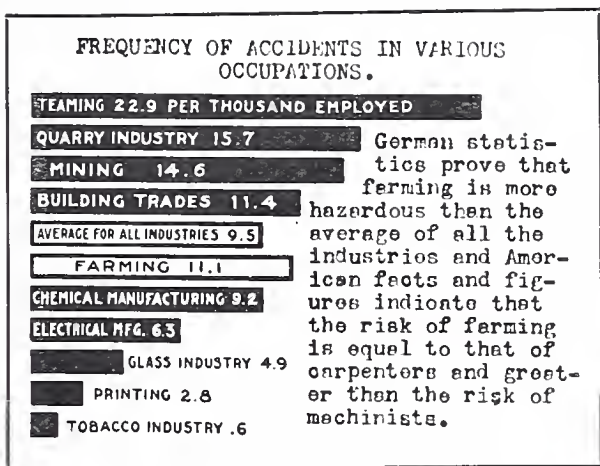
A show window poster may also be used to attract public attention. An example from commercial clubs and like organizations may help in the work. (Courtesy of Rochester Chamber of Commerce.)

TYPICAL ILLUSTRATIONS SHOWING EXTENSION OF SAFETY MOVEMENT.

caused considerable surprise when I called attention thereto some four years ago. There has been a mistaken idea among legislators and the public at large that farming is not a hazardous occupation and in all but two states farmers have been exempted from the provisions of workmen's compensation laws, which, to my mind,

is wrong and should be remedied as soon as possible, because farming in the United States can easily be proven even more hazardous than similar work in Europe.

Insurance rates should be a fair basis for hazard determination. The rates shown are taken from the records of one of your Connecticut insurance institutions and prove the farmers' insurance rates higher and,



(See reference on page 5.)

therefore, I judge, his work more hazardous than those of the machinist or carpenter. (See chart below.)

Several States have given during recent years considerable attention to farm hazards and their reduction, notably the States of Minnesota and Wisconsin.

From a recent report of Mr. Don D. Lescohier of the Minnesota Bureau of Labor, I quote:

AGRICULTURE A HAZARDOUS INDUSTRY.

The substitution of power machinery for hand labor has made agriculture a hazardous industry. Corn shredders, grain separators, gasoline engines, threshers, cream separators, and other forms of machinery have changed the character of agricultural processes until much of the labor in the industry has become more analogous both in method and in danger to factory work than to earlier agriculture. * * *

When five men in a factory are killed in a year the operatives begin to ask why these accidents are happening and how they can be prevented; but when as many occur among the same number of farmers they do not realize that they have need to co-operate for protection.

Sixteen fatal accidents, two likely to result in death, eighty-five serious injuries and thirty-two severe ones, a total of one hundred and thirty-five farm accidents, a record for twenty months. The reports

10 YEARS EXPERIENCE OF A LARGE AMERICAN CASUALTY COMPANY

MILL OPERATIVES—COTTON AND WOOL

Premium Averages about \$8.00 per Annum

MACHINISTS

Premium Averages about \$10.50 per Annum

CARPENTERS—SHOP

Premium Averages about \$11.00 per Annum

FARMERS

Premium Averages about \$13.50 per Annum

(See reference above.)

for the first twelve months were especially incomplete, but there is no reason to believe that the records even for the last eight months are a complete toll of the accidents. The figures given must be considered as illustrations rather than statistics.

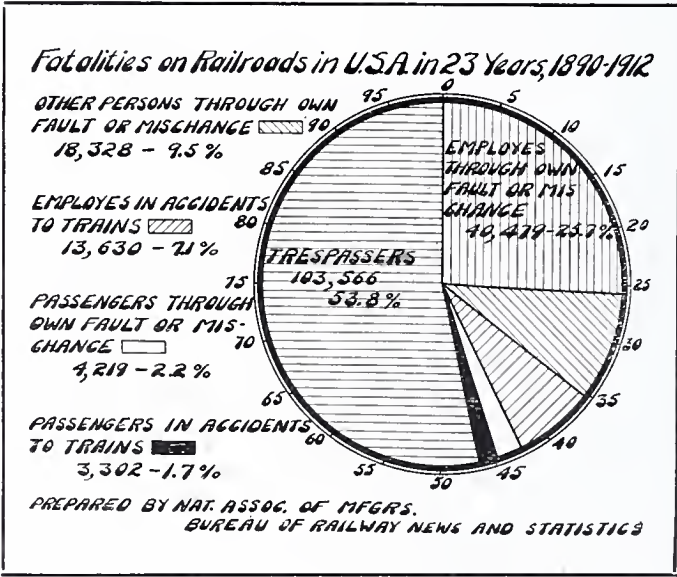
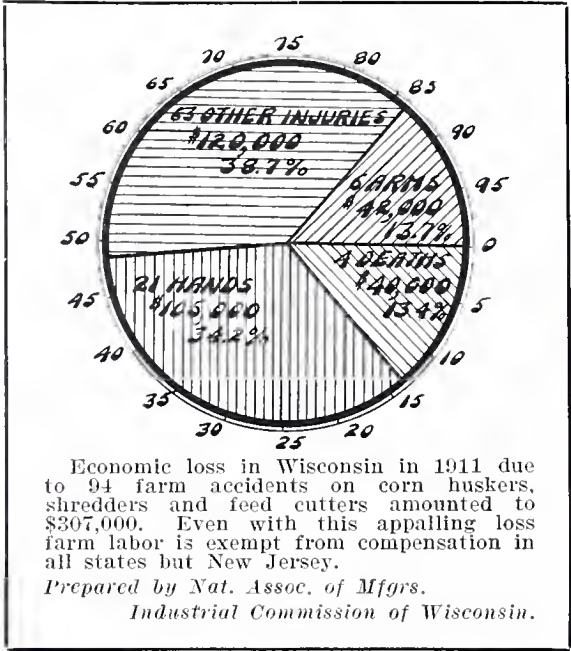
Let me also quote from the October 25th Bulletin of the Industrial Commission of Wisconsin (see chart).

Think of the pain and suffering—think of the economic loss; four deaths, \$40,000.00; six arms, \$42,000.00; twenty-one hands, \$105,000.00; other injuries, \$120,000; or a total of \$270,000.00, and this is the record of just one year and for only three machines operated upon our farms.

I am told that farm accidents are decreasing in Wisconsin in about the same proportion in which industrial accidents are reduced, and I shall follow statistics upon this point with much interest because

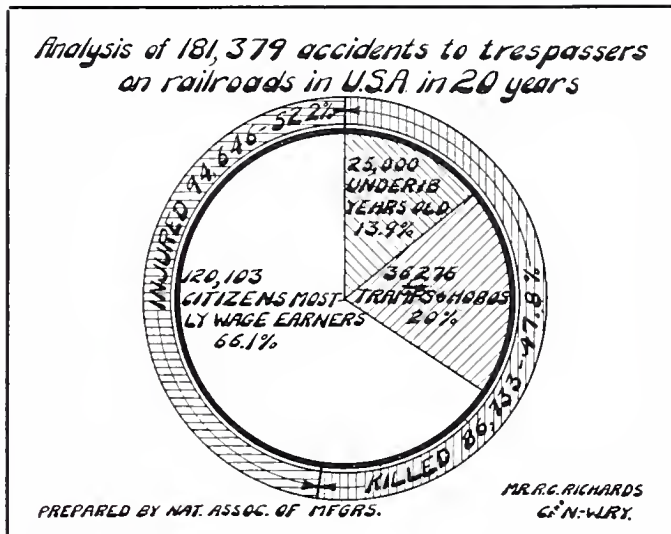
I believe that in this direction, the same as in all others, the knowledge of the existence of evil represents half the battle of overcoming it.

I doubt whether there is a hazard more misunderstood than traveling upon trains. Possibly one-fourth of all persons buying railway tickets purchase special accident insurance for the time spent upon trains on the assumption that they are subject to special risk, while as a matter of fact, a passenger upon railways, especially while traveling in Pullman cars, is safer than he is riding in his automobile or even walking the city streets. According to the Bureau of Railway News and Statistics, out of a total fatalities of 192,542 during twenty-three years, only 7,521, or 3.9 per cent. are passenger fatalities.



Bearing upon railway accidents, Mr. Ralph C. Richards, the efficient Chairman of the Central Safety Committee of the Chicago and Northwestern Railway, says:

When you stop to think that in twenty years there were 25,000 young people killed and injured in our railways—enough to make a mile post for every mile



of travel in a trip around the world, and that in nearly every city, town and village there is some child without an arm or a leg, lost trespassing on the railways, or a little grave in the cemetery, of some child—perhaps an only child—killed flipping on the cars, and that during the last few years of the twenty-year period referred to fourteen trespassers were killed and forty injured each day of the 365 days in the year, and that

four-fifths of the killed and injured, or 145,103, were not tramps but young people and children and respectable citizens; fourteen times as many trespassers killed every day and every hour as there were passengers killed.

Through the courtesy of various railway companies, I am enabled to show the illustrations reproduced on pages 10, 11 and 12, bearing upon railway accidents. These teach their own lessons.

Because this is the only civilized country in the world that does not prohibit trespassing on railroad tracks; in twenty years:

86,733 trespassers have been killed.

94,646 trespassers have been injured.

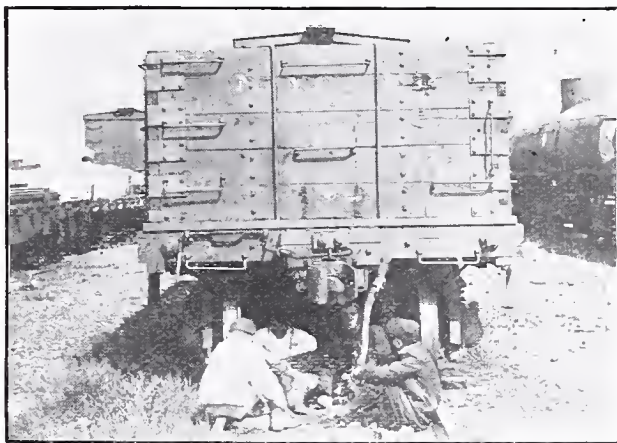
181,379—total trespassers killed and injured on the railroad tracks of this country. Divided as follows:

25,000 young people under 18 years of age, residing in the vicinity of accidents—many of them under 10 years of age.

36,276 tramps and hobo.

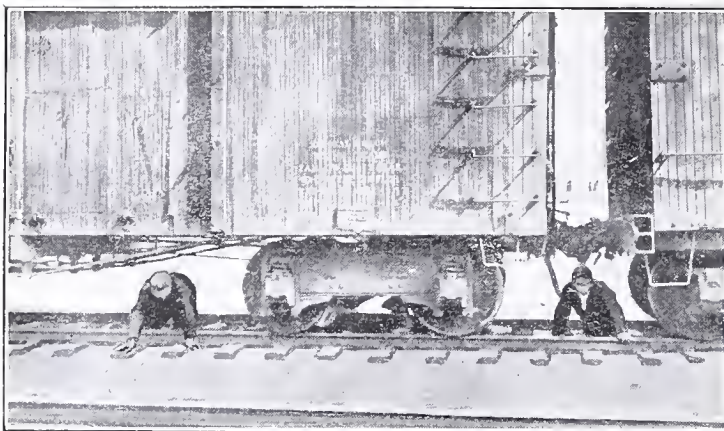
120,103 citizens of the locality in which the accident occurred—mostly wage earners.

Why not make laws, the enforcement of which would stop this slaughter? It would cost the public less than it does to pick up and bury the dead and care for cripples.



Is your boy among these?

Marcus A. Dow
N. Y. Central Lines.



Courtesy, Chicago & Northwestern Railway.

It would take less time to teach the child the dangers of this practice than it would to report the accident. Children fail to realize the dangers involved in railroad trespassing.

Railroad property is a dangerous playground. Give the children a safe place to play and assist in decreasing the annual toll of accidents to railroad trespassers.



Courtesy, Chicago & Northwestern Railway.



Courtesy, Chicago & Northwestern Railway.

Flipping on and off of cars is a dangerous pastime for boys and is one of the most common of trespassing evils. A strict trespassing law would aid materially in breaking up this practice.

THE DANGERS OF RAILROAD TRESPASSING.



Courtesy, Chicago & Northwestern Railway.

A common sight along railroad property. It is strongly urged that an educational movement be started in the public schools teaching the children the evils of trespassing.

DANGERS IN RAILROAD TRESPASSING.

The United States is the only civilized country in the world that permits trespassing on railroad property, which practice results in fourteen deaths and forty injuries every day in the year.



Courtesy, Chicago & Northwestern Railway.

SAFETY FIRST STANDS FOR:

Conservation of Human Life.

Elimination of Chance Takers who are the makers of cripples, widows and orphans.

For Safety Men as well as Things.

For Greater Safety and Regularity.

**In twenty-nine months on the Northwestern it resulted in
190 fewer death.**

6,529 fewer injuries.

Why not boost for Safety First and wipe out the accident business?

Courtesy, Ralph C. Richards.



A short cut to the ball ground—also DEATH.
Marcus A. Dow, N. Y. Central Lines.



Legislation and education must cure this.
Marcus A. Dow, N. Y. Central Lines.



Who is to blame?
Marcus A. Dow, N. Y. Central Lines.



Think of it, 13,000 children under 14 years old killed
 and injured while trespassing in 10 years.
Marcus A. Dow, N. Y. Central Lines.

SOME SOURCES OF RAILROAD ACCIDENTS.

Industrial, farm and railway workers are by no means the only sufferers from accidental injuries. Realizing the number of preventable accidents that happen daily upon our city streets, there was inaugurated in the city of Chicago recently a Public Safety Commission. This Commission includes in its members the Mayor, the Chief of the Fire Department, the Chief of Police and other city officials, also a number of county officials, ministers of Protestant and Catholic Churches and officials of the various railroad companies and industries, street railway officials, engineers and safety experts, the publishers of newspapers, judges, attorneys, physicians, business men and others, all of whom are interested in the advancement of the "Safety First" movement.

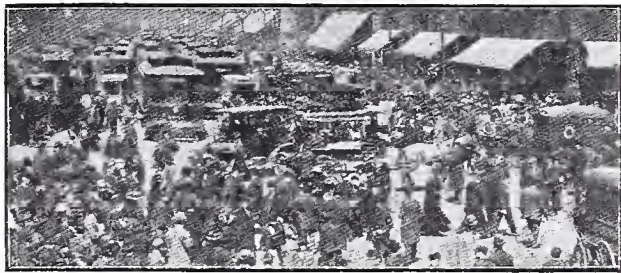


Advertising pays in the prevention of accidents.
(Courtesy of Rochester Chamber of Commerce.)

The object of the Commission is best stated in its constitution, thus :

The object of this organization shall be to safeguard and protect persons and the public from the dangers of automobiles, railroads, street railways and all forms of transportation and traffic on the public highways in Chicago and Cook County. To minimize the injuring or killing of persons on the public highways therein, and in stores, factories, workshops and all other departments of industrial or mercantile employment or activity. To investigate and classify the causes of violent death and of injury. To ascertain, advocate and secure possible remedies and preventives of the same. To enlighten and educate the public through schools, churches, literature and by publicity upon all matters and things pertinent to the foregoing subjects, and to compile and preserve statistics regarding the same. To assist in the enactment and enforcement of regulations, ordinances and laws necessary or requisite to carry out the foregoing purposes.

A number of eastern cities have in their public schools a day specially devoted to public safety. Every school in the United States should have such a day, but in addition thereto motion pictures and slides similar to those which have been gathered by the National

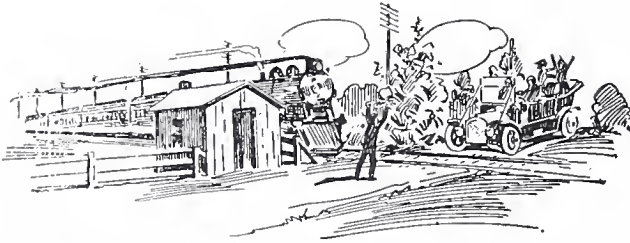


Deaths caused by automobile accidents in Chicago increased 2,140 per cent. from 1905 to 1913, or from 1 death for 1,290 automobiles to 1 for 188. (Prepared by Nat. Assoc. of Mfrs. Courtesy, George H. Whittle.)

Association of Manufacturers and by Public Service Corporations in New York, Chicago, Philadelphia and Rochester for educating grown people, as well as boys and girls, in the Safety Movement, should be made use of at the gatherings which are taking place at the social centers of schools and churches in winter, and in public parks in summer.

From an article by Mr. George H. Whittle, President of the Public Safety Commission of Chicago and Cook County, I quote the following :

ACCIDENTS ON OUR STREETS.



Traffic accidents in London with a population of 7,500,000 in 1912 compared with Chicago, only one-third as large, were 537 against 697. (Courtesy, Rochester Chamber of Commerce and George H. Whittle.)

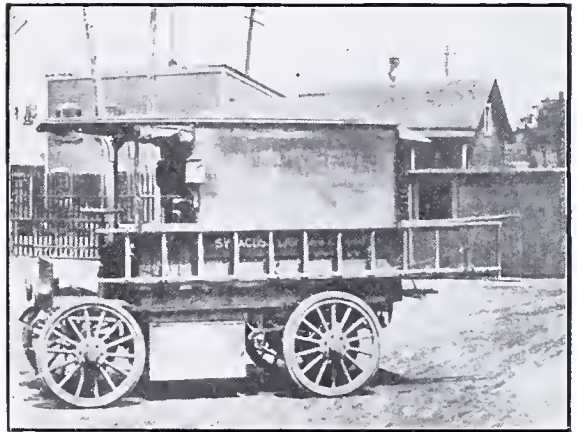
number of accidents; in 1912 automobile accidents contributed 21 per cent. to the total number, an increase of over 2,000 per cent. It has been ascertained that 50 per cent. of all deaths from automobile accidents are due to the carelessness of pedestrians.

The increase in accidental deaths in Chicago during the past year has been enormous. Take one case alone as an example. In 1905 there were five deaths from automobile accidents and in 1913 there have been 107 deaths in the first eight months, an increase of from one death for 1,290 automobiles to one death for 188 automobiles in eight years—surely a record that calls for drastic action.

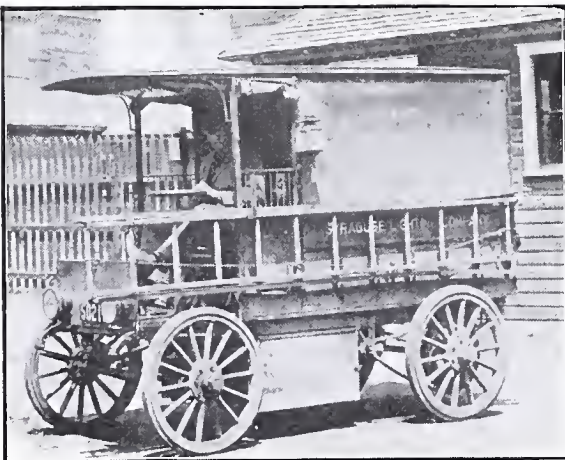
The increase in automobile traffic in Chicago has increased seven times since 1907 while the death rate of accidents by automobile has increased from five in 1905 to 107 for nine months in 1913, or twenty times, with several months to

There are more people continually idle in the United States by reason of disability through accidents than from any other cause. I am told that one fire insurance policy out of every fifty produces a claim, that one accident insurance policy out of every eight produces a claim.

In the United States in 1906 the automobile accidents contributed 2 per cent. to the total



When turning corners trucks with projecting ladders, pipes or bars are a menace to pedestrians. (Courtesy, United Gas Improvement Co., Philadelphia.)



Ladders are placed so as to project in the front and eliminate one traffic hazard. (Courtesy, United Gas Improvement Co., Philadelphia.)

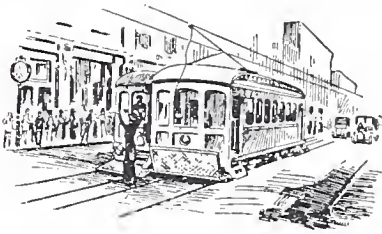
hear from. Is it any wonder that there is a demand for a change from such conditions?

"It is plain to see why the Public Safety Commission of Chicago and Cook County has become a real live, active force in the community. One of the first efforts of the commission will be to secure a new general traffic ordinance that can well stand as a model for years to come for any city. We shall co-operate with the city officials in this work and try to secure an ordinance that will be clear cut and efficient. We shall work for better state laws and better city ordinances covering all lines of danger to public safety by providing drastic penalties for violations and we

will back these laws and ordinances with the public sentiment that will compel their enforcement.

Enforced penalties for lawlessness and recklessness will minimize the accidents resulting therefrom. As to carelessness, it must be a matter of education. We can and will go into the schools, into the homes, into the factories, into the streets. We can teach and advise and warn until we secure a public sentiment that has a care for danger, a public sentiment that will instill into the individual a respect for the rights of others.

GET THE SAFETY HABIT.



Wait until the car on which you are riding has gone ahead before crossing the opposite bound tracks. Look and listen for the car that may strike you. Time required, one minute. Would you bet your life against sixty seconds? (*Courtesy of Rochester Chamber of Commerce.*)

should have destructive features, but the number of people who slip in one way or another and fracture arms or legs or inflict minor injuries upon themselves in this way is surprising.

Falling down stairs is the next most favored method of inflicting injury upon oneself. It is true that the stairways in homes are not so well lighted as those in office buildings, stores or factories, but it would seem that this lack of light ought to be more than balanced by the greater familiarity people would have with their own stairways.

The high-heeled shoe is responsible for many falls both in and out of the house, but it is especially dangerous on stairways where the edge of the heel catches and trips the wearer into a headlong fall.

Burns, scalds and fires in the kitchen are responsible for much in the list of accidents. These occur either through carelessness or ignorance of conditions.

The tea kettle, half full of boiling water, is taken to the sink to be filled, the top removed, the water turned on and the hand kept on the handle. The steam may cause her to drop the kettle, thus spilling the boiling water upon her.

The grease employed in cooking some kinds of food is a source of danger because it both spatters and takes fire after being heated above a certain point. Burning grease is very dangerous and burns deep into the flesh and the wounds heal slowly. Should the grease take fire it is extremely difficult to extinguish the blaze.

Persons who pull down shelves upon themselves, drop heavy weights upon their feet or inflict painful cuts by axes or hatchets, are in a class by themselves. The danger is specific in every respect and it is for the most part a thankless task to impress upon them general rules of carefulness; in other words, it is useless to suggest methods of doing things that should suggest themselves.

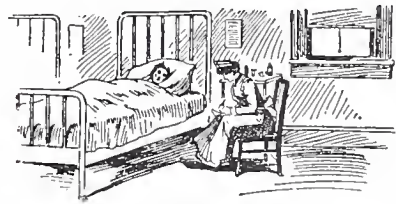
If we were to ask the question: "What is the safest place?" nine out of ten would answer, "Our homes." However, investigations indicate clearly that even the home can be made very much safer than it now is.

Let me quote from a pamphlet published by the Rochester Chamber of Commerce:

ACCIDENTS IN THE HOME:

It is a peculiar thing that accident insurance companies find that the bath tub is responsible for the largest number of accidents that occur in the home.

On first thought it seems extraordinary that this agent of cleanliness



Make yourself master of your time. Do not let it master you. Because you have eternity before you, do not plunge into it to save a minute. (*Courtesy of Rochester Chamber of Commerce.*)

It can be taken as a fact that accidents in the home are due to the fundamental causes, haste and carelessness.

Will you, gentle reader, turn your attention upon yourself and upon these quotations? If the telephone or door-bell rings, do you, in your haste to answer, endanger your life on the stairway or on rugs or waxed floor? Do you mingle caution with your haste? Do you, as you go through your daily routine remember that it is just as important to do each thing carefully as it is to get the thing done?

If by neglecting precautions for your safety and the safety of others you increase the cost of living by breaking bones, straining muscles, burning the flesh, to say nothing of the cost of replacing destroyed utensils and equipment, are you making yourself the best possible housekeeper?



DANGEROUS PLAY

Strangely enough, the usually harmless game of "tag" adds heavily each year to the total number of those injured in the public streets. (Courtesy, Rochester Chamber of Commerce.)

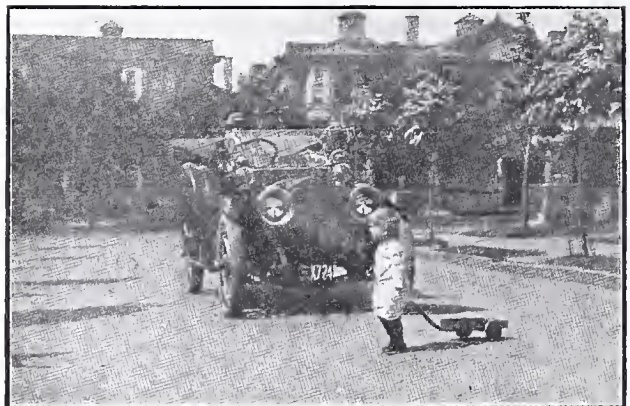
Next in importance to a proper understanding of hazardous occupations is an analysis of accident causes, and the charts on the two following pages will aid us.

Here again our statistics are based only upon incomplete records of short duration and it is well to consider the two charts at the top of the opposite page, based upon the very complete statistics of Germany.

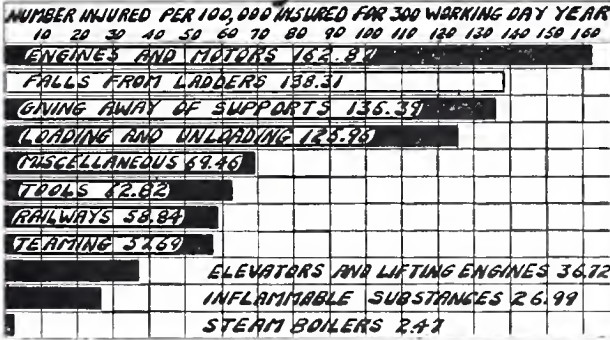
Let me call attention to the fact that falls from ladders head the causes of agricultural accidents, and are second in importance in industrial accidents.

The lack of accurate United States statistics becomes more apparent as we go deeper into the subject, and the next question the responsibility for accidents must again be answered from German statistics.

Teach the youngsters to stick to the safety of the sidewalks, and when necessary to cross, to first look in both directions before stepping off onto the street. (Courtesy, Rochester Chamber of Commerce.)



Cause and Frequency of Accidents for All Trades, Building Industries and Seamen in Germany in 1909



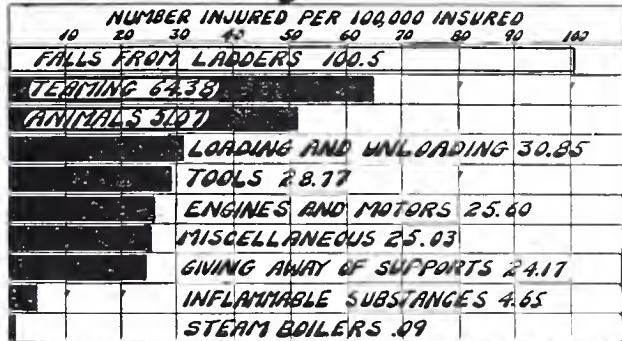
PREPARED BY NAT. ASSOC. OF MFGRS.

OFFICIAL GERMAN RECORDS.

It is generally supposed that railroad work is exceptionally hazardous, but taking all industries as a whole it will be seen that falls from ladders cause almost two and one-half times as many accidents as occur on railroads. Accidents of this kind can largely be prevented by personal caution.

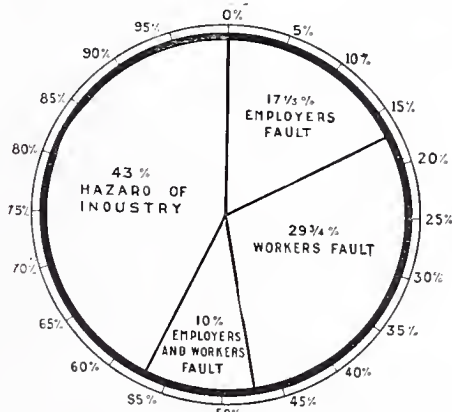
Among farmers the percentage of accidents due to falls is more noticeable. Many of us have a horror for steam boilers because of the stored up energy and the damage caused by an explosion. The ordinary ladder of which we have no concern causes over one hundred times as many accidents as the boiler.

Cause and Frequency of Accidents to Agricultural and Horticultural Workers in Germany in 1909



PREPARED BY NAT. ASSOC. OF MFGRS.

OFFICIAL GERMAN RECORDS.

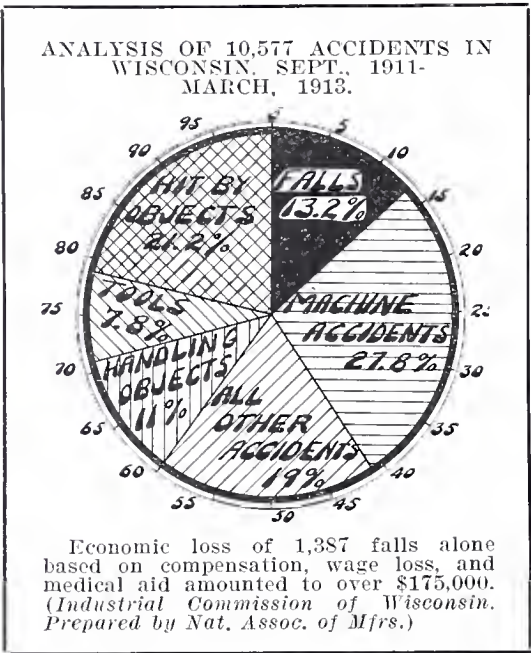


Responsibility for Industrial Accidents in Germany. (Prepared by Nat. Assoc. of Mfrs.)



Responsibility for Agricultural Accidents in Germany. (Prepared by Nat. Assoc. of Mfrs.)

When we naturally ask next what preventive agencies can be employed, and their relative importance, we find the views of some of our prominent safety experts of value (see charts, top of opposite page).



It is well here to call attention to the fact that successful industrial accident prevention must go hand in hand with factory sanitation, ventilation and hygiene. It is as important to prevent injury to the worker's lungs by proper ventilation as it is to prevent injury to his hands by mechanical safeguards. Physical examination of every applicant for work is practiced in many industrial establishments in order to prevent contagion, and medical attention, even to small injuries, is important to prevent infection.

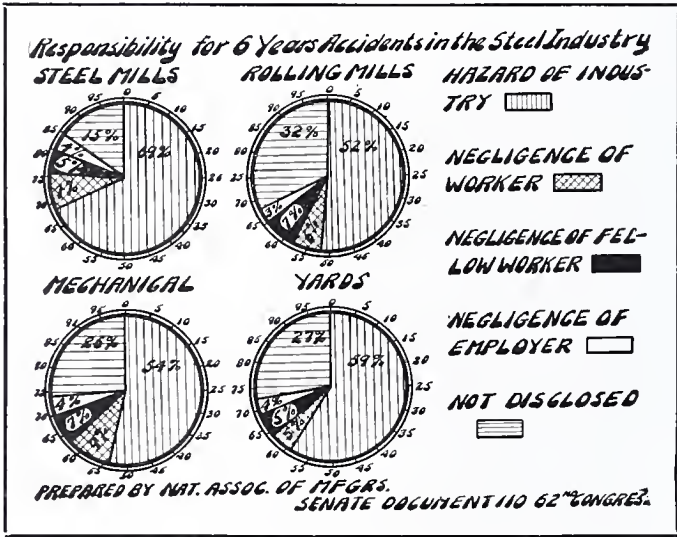
All of these phases of the safety problem are usually handled by the same departments in our large industrial

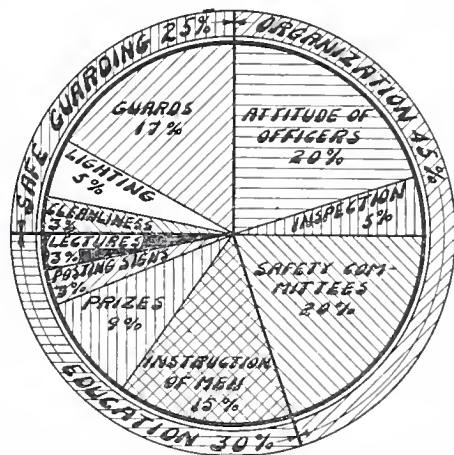
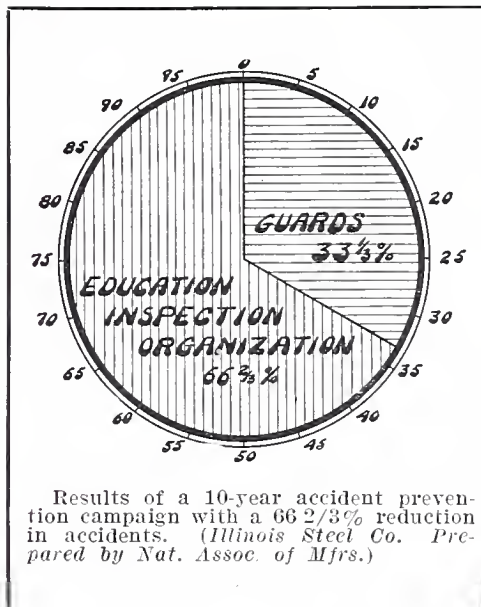
establishments but in smaller establishments the need of prevention by ventilation, sanitation and hygiene is fully as great as by mechanical safeguards.

Education is by all odds the greatest factor in both directions and closer co-operation between medical and engineering safety experts is of the greatest importance.

It would be most interesting to compare the relative accident rates in similar occupations in the United States and other countries, but here again the lack of accurate statistical data prevents definite conclusions. Many prominent and conservative authorities have assured us that accidents are much

more frequent here than in most European countries, and my own impression corresponds with these views, but how easy it is to prove two conclusions almost diametrically opposing each other from the same set of figures is shown in the two charts on page 20.





(See reference on opposite page.)

It is evident from these two charts (page 20), that the United States, while showing the greatest number of fatalities per 1,000 coal miners employed, has less fatalities per million tons of coal mined than Japan, India, France or Germany.

It is timely here to point out that fatal accidents do not nearly cover the total losses. It is recognized that serious and especially permanent injuries are often from an economic point of view more costly than deaths.

During 1911, an analysis of coal mine accidents in the United States shows that minor injuries comprise 65.4%, the serious 26.7%, leaving 7.9% that resulted in death.

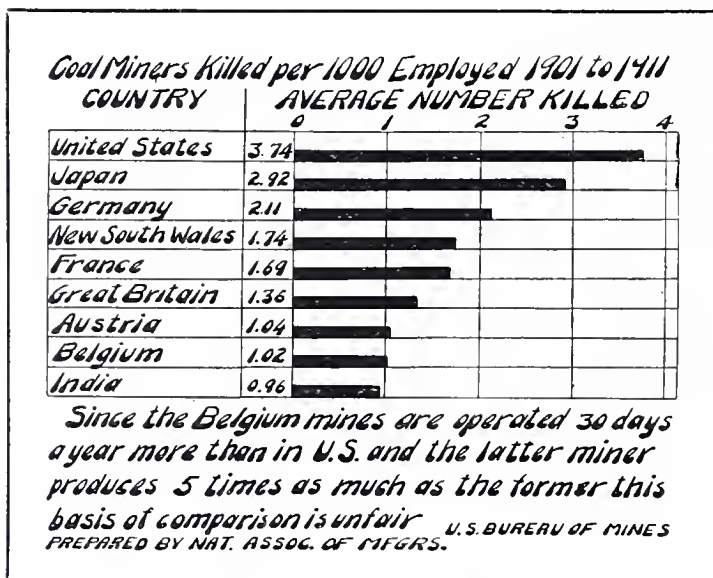


SAFETY ON STAIRWAYS. Dangerous Way. Skirts are allowed to drag and be stepped on. If the girl to the right stumbled and caught hold of her partner both would be apt to fall. (Courtesy, Eastman Kodak Co.)



SAFETY ON STAIRWAYS. Safe Way. Notice that one girl takes hold of rail with right hand and skirt with left. The other girl takes her arm and holds skirt with left hand, greatly reducing chance of stumbling and falling. (Courtesy, Eastman Kodak Co.)

From the middle chart on the page opposite, derived from fatal industrial accidents in 80,000 plants, extending over a period of three years, it will be seen that the greatest number of accidents occur during the winter months or during a time of the least amount of natural light.



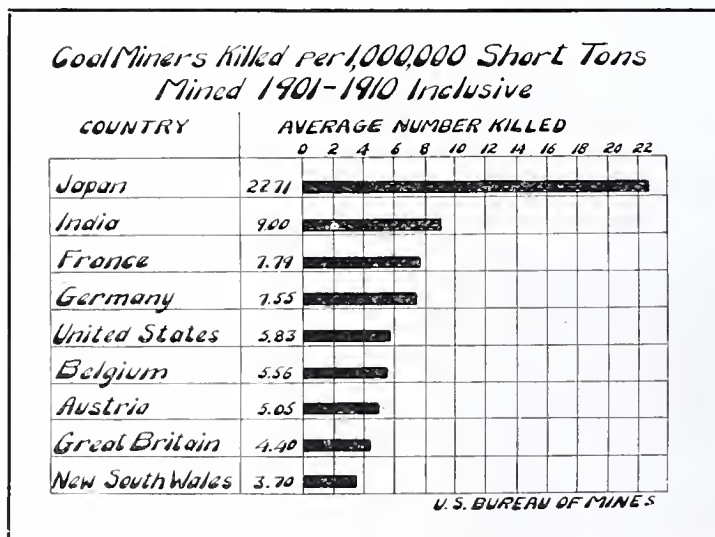
(See reference on page 19.)

providing plenty of good light, daylight preferred. Good light is especially essential around wood working machinery or at punch presses where the safety of the fingers depend on the operator properly seeing the work at all times.

Poor or improper light in workshops is a much larger factor in accidents than is generally understood, and the illustrations shown opposite are instructive upon this phase of the subject under discussion.

The results of safety campaigns, as shown by records of improvements are almost startling. I have shown in one illustration (top of page 19) the statements of the Illinois Steel Company of 66 2/3 per cent.

reduction of accidents in ten years. Another tabulation chart, prepared by a steel company, reveals a decrease of 51 per cent. in the accident rate in ten years, and at the same time an increase of 48 per cent. in output during the same period.



(See reference on page 19.)

Every effort should be made to provide properly lighted working places which is now made possible due to improvements in lighting systems made within the past few years. Nothing will demoralize a department or shop more than an accident, and an important step in the right direction, is providing

Influence of Daylight on Accidents Showing Rates per 1000-300 day workers in Large Steel Plant 1905 to 1910

DEPARTMENT	100	200	300	400
BLAST FURNACES		238	243	
BESSEMER		245	312	
OPEN HEARTH		205	270	
ROLLING MILLS	153	212		
MECHANICAL	153		334	
YARDS	143		340	

PREPARED BY NAT. ASSOC. OF MFGRS.
SENATE DOCUMENT 110 62ND CONGRESS

In the chart in the centre of page 22 a comparison of accidents in two steel plants, one with a well working safety organization, the other without such an organization.

A reduction of nearly 49 per cent. of accidents in three years at the works of the Eastman Kodak Com-

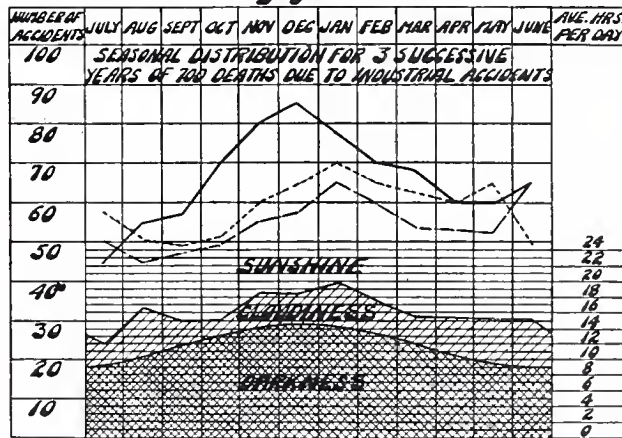
pany is another splendid record.

Comparison of injuries in nine large plants operated by one company indicates a decrease of from 8 per cent. to 60 per cent. in seven out of these nine plants, while two plants show an increase (p. 24.)

Reductions amounting to from 3 per cent. to 35 per cent. in accidents were brought about by one railway system between 1910 and 1913 (see page 24).

The chart at the foot of page 24 made from information furnished

Influence of Daylight on Accidents



PREPARED BY NAT. ASSOC. OF MFGRS. COURTESY FIDELITY-CASUALTY CO.



RIGHT

WRONG

RIGHT AND WRONG WAY OF LIGHTING

Improper illumination doubles the accident risk, increases the per cent. of spoilage and produces eye strain and unnatural fatigue due to the effect of glare. (National Electric Light Association.)

by Mr. C. W. Price, the able assistant to the Industrial Commission of Wisconsin is startling in showing reductions from 27 per cent. to 85 per cent. in the accident records of various corporations.

Another startling reduction of 41 per cent. in the number of accidents in one steel mill in the first year of safety work is illustrat-

Reduction of Accidents Accomplished in a large Steel Mill in First Year of Safety Work

	TOTALS		REDUCTION PERCENT
	1910	1911	
EMPLOYEES	1312	1145	13%
FATALITIES	4	1	75%
DISABLED 31 DAYS OR MORE	61	20	67%
DISABLED 11 TO 30 DAYS	165	92	44%
HOURS LOST	83,586	49,327	41%

PREPARED BY NAT. ASSOC. OF MFGRS.

WISCONSIN STEEL CO.

(See reference on page 20.)

tion taken from the pages of the "Safety Supplements" of *American Industries*, the magazine of the National Association of Manufacturers are shown on pages 23 and 26.

Pictures of this kind find a very important place on Bulletin Boards, calling the attention of the

Comparison of accidents per 1000-300 day workers in Steel Plant with safety system to one that has none

DEPARTMENT	ACCIDENT RATE			
	200	400	600	800
Blast Furnaces	168	507		
Steel Mills	291		943	
Rolling Mills	208	534		
Yards	147 196			
Mechanical	112	519		
All Departments	180	506		

SENATE DOCUMENT 100 62ND CONGRESS
PREPARED BY NAT. ASSOC. OF MFGRS.

(See reference on page 21.)

Accident Reduction Accomplished by 3 Years Accident Prevention Campaign

	TOTAL 1910	PER 1000	TOTAL 1911	PER 1000	TOTAL 1912	PER 1000
TOTALS	412	109.12	309	71.68	341	61.13
AVE. MONTHLY EMPLOYEES	3,755		4,311		5,578	
REDUCTION IN ACCIDENTS PER 1000 EMPLOYEES SINCE YEAR 1910				38.04		48.59
PERCENTAGE REDUCTION OVER 1910				34.67		
PERCENTAGE REDUCTION OVER 1910						44.29

PREPARED BY NAT. ASSOC. OF MFGRS.

EASTMAN KODAK CO.

ed herewith.

The Eastman Kodak Company, who has been one of the foremost in regard to accident prevention work, has made consistent and marked reductions in all departments as shown in the table at the foot of this page.

A few typical illustrations of industrial accident causes and preven-

employee to dangerous chances that should be eliminated and are often taken through carelessness and ignorance.

The illustrations on page 25 indicating cause, effect and prevention show one of the most common hazards of any manufacturing establishment and also one of the most seri-



The workman coming out of the doorway fails to notice the danger sign and is stepping in front of a moving car. (Courtesy of Racine-Sattley Company.)

The trainman hanging on the side of the car fails to notice the clearance sign indicating close clearance for man on side of cars and runs the chance of being crushed between cars and building. (Courtesy of Racine-Sattley Company.)



CAUSES OF ACCIDENTS PER 1000 EMPLOYEES

CAUSE OF ACCIDENT	Total 1910	Per 1000	Total 1911	Per 1000	Total 1912	Per 1000
Punch Presses and Shears	54	14.33	40	9.28	24	4.30
Woodworking Saws	18	4.79	19	4.41	15	2.69
Woodworking Cutters	8	2.13	10	2.32	7	1.25
Bruises, Burns, Lacerations	168	44.74	144	33.45	156	27.97
Falls	41	10.91	27	6.26	36	6.43
Elevators	3	.80	6	1.39	4	.72
Emery and Grinding Wheels	13	3.46	5	1.16	9	1.61
Obstructions	2	.53	2	.46	7	1.25
Falling Objects	36	8.59	32	7.42	26	4.66
Drilling and Boring Machines	32	8.53	8	1.86	19	3.41
Automatic Screw Machines	4	1.07	3	.70	5	.90
Lathes and Milling Machines	18	4.79	2	.46	4	.12
Stepping on Nails	15	4.00	11	2.55	17	3.05
Special Machines					12	2.15

Eastman Kodak Co

Comparison of injuries in 9 plants operated by one company

PLANT NUMBER	RATES PER 1000-300 DAY WORKERS		PERCENTAGE	
	1910	1911	INCREASE	DECREASE
1	91.1	85.8		5.8
2	139.8	109.9		11.1
3	120.1	152.4	26.8	
4	38.1	45.0	18.1	
5	70.1	50.9		39.6
6	63.8	39.9		60.0
7	67.7	38.1		77.6
8	128.6	84.0		52.3
9	82.0	75.9		8.3

PREPARED BY NAT. ASSOC. OF MFGRS.

SENATE DOCUMENT 110 62ND CONGRESS

See reference on page 21.

occur, and some are bound to happen even in the best organized shops, medical attention should be immediately given in order to guard against blood poison. Around shipping and unloading platforms should especial care be taken to see that men do not leave boards lying with upturned nails, as

o u s. Employees should be carefully instructed against throwing boards aside containing protruding nails, as accidents from this source have often resulted in death. It has been said by some noted medical authority, t h a t every nail puncture wound causes some degree of blood poisoning. If injuries of this kind

Reduction of Accidents Accomplished on a large Rail Road System in three Years from 1910-1913

	REDUCTION PER CENT
DEATHS TO EMPLOYEES	35 %
INJURIES TO EMPLOYEES	25.6 %
INJURIES TO PASSENGERS	20.2 %
DEATHS TO OUTSIDERS	13.2 %
INJURIES TO OUTSIDERS	3.1 %

This remarkable record was made during a time when business increased \$9,000,000 in 1913 over 1910.

PREPARED BY NAT. ASSOC. OF MFGRS

MR. C. W. PRICE
IND. COMM. OF WIS.

See reference on page 21.

Accident Reduction Records made by various Companies

ILLINOIS STEEL CO. (SINCE 1900)	66 2/3 %
WISCONSIN STEEL CO. (SINCE 1910)	68 %
JONES & LAUGHLIN STEEL CO.	71 %
FRISCO RAILWAY (DEATHS)	33 %
FRISCO RAILWAY (INJURIES)	27 %
FAIRBANKS-MORSE MFG. CO.	72 %
FAIRBANKS-MORSE MFG. CO. (FOUNDRY BURNS)	85 %
AMERICAN STEEL FOUNDRIES (EYE INJURIES)	85 %
HARRISON BROS. & CO. (FIRST YEAR)	68 %

PREPARED BY NAT. ASSOC. OF MFGRS.

MR. C. W. PRICE
IND. COMM. OF WIS.

See reference on page 21.

they are always a menace to other employees.

One of the most practical ways of bringing this dangerous practice to the attention of the employers is the posting of photographs similar to these or putting up special bulletins or posters as done by the International Harvester Company.



THE BANK OF SAFETY

pays 100 per cent.
and never fails

CAUSE.
Boards containing up-
turned nails are always a
menace. (Courtesy, New
York Central Lines.)



EFFECT.

How would you like to step on a
rusty nail that might cause lock-jaw?
(Courtesy, New York Central Lines.)



PREVENTION.

It only takes a moment to bend
the nails down and this act may save
a fellow workman's life. (Courtesy,
New York Central Lines.)

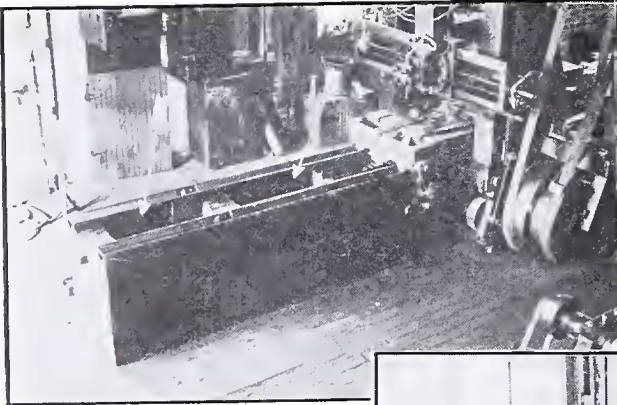
— SAFETY FIRST —

First Aid to the Uninjured

Stop taking chances. It's
better to have your friends
say "How do you do?" than
"How natural he looks"



The up-turned handle of the manhole
cover may result in a fall causing a
broken foot. (Courtesy, United Gas Im-
provement Co.)

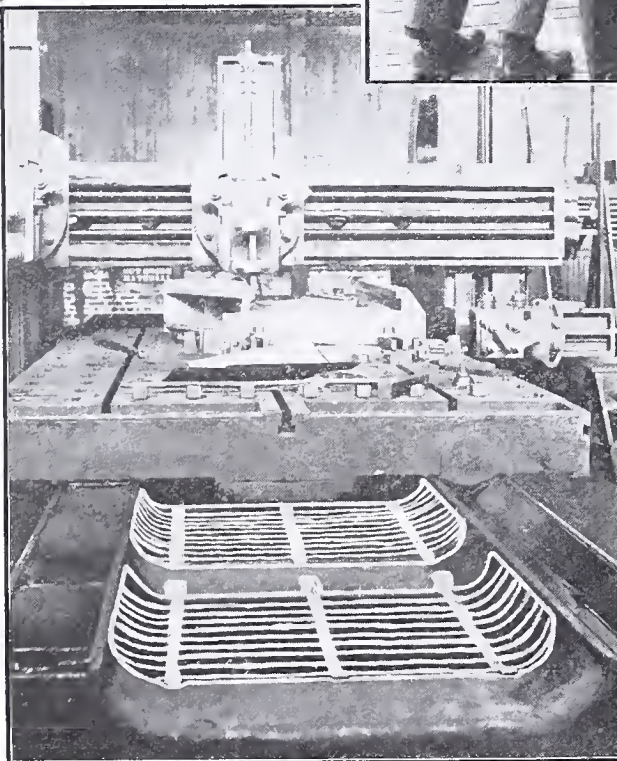


CAUSE.

The openings between the ribs of a planer bed are often used as a storage place for tools, clamps, blocks, etc.

EFFECT.

The operator has his arm caught between table and rib of bed while reaching for a clamp, which may result in an injured hand or arm. Even though the table moves slowly these accidents have frequently happened.

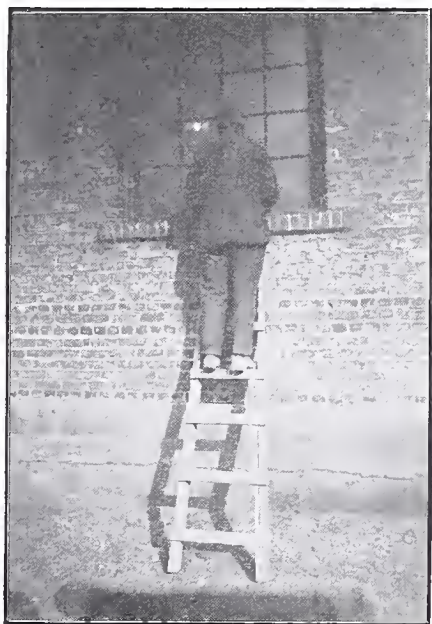


PREVENTION.

The bar guard or gratings shown over openings are to prevent the operator reaching into same and getting injured by the moving table. This eliminates the possibility of the openings being used as a storage place. (Courtesy of Bucyrus Company.)

(Taken from "Safety Supplements" of *American Industries*.)

HOW ACCIDENTS HAPPEN—CAUSE, EFFECT, PREVENTION.



Ladder falls cause more accidents than any one other source. (Courtesy, Inland Steel Company.)



A wise man profits by the experience of others. (Courtesy, Inland Steel Company.)

HOW ACCIDENTS HAPPEN.



Keep out of the way of coupling lever when dumping hopper bottom cars. (Courtesy, Inland Steel Company.)



Accidents nearly always result from careless acts, the man who thinks before he acts avoids accidents. (Courtesy, Inland Steel Company.)



UNSAFE TOOLS.

Tools like these have caused the loss of many eyes. (Courtesy, Inland Steel Company.)



SAFE TOOLS.

Don't work with unsafe tools. Safety is the best policy. (Courtesy, Inland Steel Company.)

Look 'way down the track and see your finish. Is it ripe old age thru **SAFETY FIRST**, or sudden death thru carelessness?

QUIT SHAKING HANDS WITH DEATH
and
GET ACQUAINTED WITH SAFETY FIRST



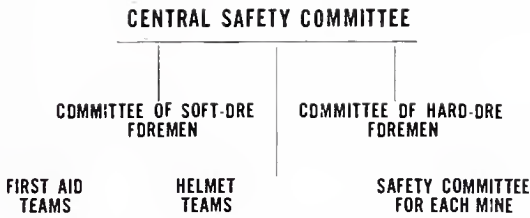
Hours of suffering and pain may be saved by a moment's forethought. (Courtesy, New York Central Lines.)



Don't climb over ears. Use the regular path for pedestrians. (Courtesy, Inland Steel Company.)

Plan of Safety Organization of Cleveland—Cliffs Iron Co.

SAFETY INSPECTOR, IN CONTINUOUS EMPLOYMENT



Courtesy, Bureau of Mines.

I have pointed out at the beginning of my talk that organized co-operation is the key-note to success in preventing accidents. It would take more than an hour's talk to give reasonable attention to this phase of the subject alone and it must suffice to show in diagrammatic form how some of our

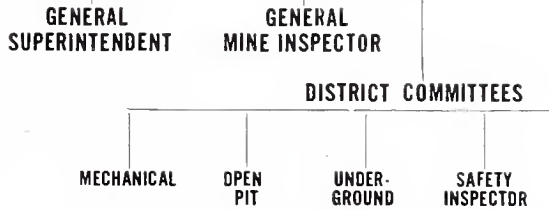
most successful safety committees are organized.

Let us not forget in passing this subject of organization that the most important requirement toward success is the safety organization's penetration to, and representation in every department from manager down to day laborer.

Plan of Safety Organization of the Oliver Iron Mining Co.

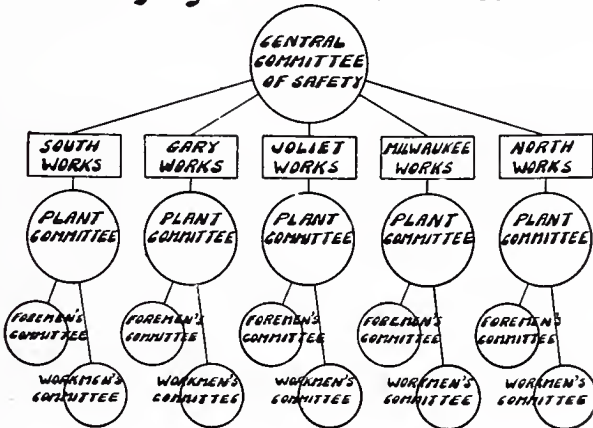
**GENERAL SAFETY COMMITTEE
UNITED STATES STEEL CORPORATION**

GENERAL SAFETY COMMITTEE OLIVER IRON MINING CO.



Courtesy, Bureau of Mines.

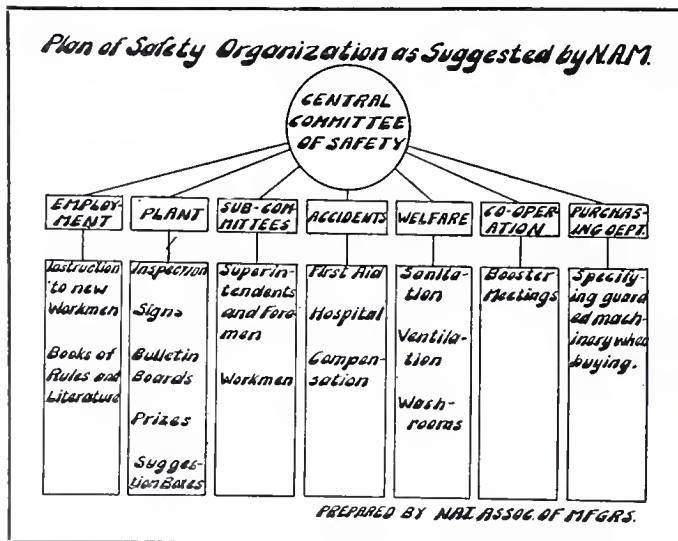
Plan of Safety Organization of Illinois Steel Co.



Courtesy, Illinois Steel Co.

One very able member of one of our State Industrial Commissions is reliably quoted as saying that proper co-operation of organized safety committees is a better guarantee of success than the most stringent laws that have been enacted upon the subject by any State.

"Great possibilities in the direction



of a solution of the problem of accident prevention lie in the so-called safety committees which have been organized on many roads. These committees are composed of officers and employees who co-operate in striving to eliminate accidents due to failure of men to properly perform their duties. By making "safety first" the dominant idea in the minds of employees, and continually pointing out methods for its attainment, an important step in the right direction is taken."—
(From 1912 report of the Interstate Commerce Commission.)

Much has been said and written in regard to the value of a safety

organization but has been almost entirely confined to very large plants or to corporations embodying a number of plants. No matter the size of the plant, even if employing but twenty-five men, some definite organization should be had to have charge of all safety work. This organization should act as a clearing house for all safety matters, and devise ways and means of getting all employees interested in safety work. In small plants, this work may be in charge of the superintendent or manager, but in larger plants the governing body may take the form of a Central Committee, and be composed of a number of members.

Outside of the shop organization regular inspections should be made by a competent safety engineer. A large manufacturing concern which does not employ regularly a safety expert is, at the present day, considered as much behind the times as a plant equipped with out-of-date machinery.

I have found it good policy to have safety work paid out of a special fund provided by the board of directors for this sole purpose. This prevents the shop showing in maintenance and operating costs,



Adopted by the Committee of Safety of the United States Steel Corporation, and in use throughout the Subsidiary Companies of the Corporation. It is placed on all warning signs to indicate danger, and for the especial benefit of the foreigner who cannot read. It is hoped this will become as significant as the Red Cross; and, to that end, its general use by other employers, both in this country and abroad, is being suggested and invited.

being burdened by safety expenditures. The shop officials all feel that the safety work does not stand in the way of their getting such appropriation as they need and that it does not stand in the way of efficiency and output but rather helps it. The separation of the financial burden of safety work is a specially helpful and wise feature.

It is only within the last year that a systematic effort has been made to establish some generally recognized standards in the way of danger and safety signs.

The red ball which has designated "Danger" in railway practice for many years was first adopted by the United States Steel Company as a general danger sign, and it is probably more widely used now in the United States than any other.

Following the generally accepted custom of "red" for danger and "green" for safety, the National Council for Industrial Safety has originated a general safety sign which is well suited for general adoption. It is to be hoped that the near future may bring about the universal acceptance of some emblems as well suited for this work and as fully recognized as is the Red Cross in its field.

Standardization and uniformity are not only required in signs, but also in safety rules, in safety statistics and in the classification of hazards.

The National Association of Manufacturers stands ready to give up its own standards whenever these can be exchanged for universal standards.

A MESSAGE TO COLLEGES AND ENGINEERING STUDENTS.

And let me in conclusion point out why engineering colleges and engineering students should get especially interested in the Safety Movement.

1st. It is a humane duty for every good member of society to



Emblem (white cross on a green field) adopted by the National Council of Industrial Safety, which some day promises to be as well known as the Red Cross in its field.

conserve the nation's best assets, the lives and limbs of our people, by preventing fire and accident.

2nd. We are assured by many authorities that an engineering education in our best institutions is conducted upon more practical lines than in European schools. A practical engineering course in the twentieth century should cover safety. The civil engineer, mechanical, electrical, chemical and agricultural engineers, turned out yearly by our many excellent institutions, are the men who in a large measure will write the future history of the United States.

Efficiency must be the key-note in our future industrial history, and we must rely upon engineers to increase efficiency by decreasing waste. Economically speaking, accidents represent "Waste." Up to a few years ago the principal consideration in designing and operating American machinery was speed and output. To-day humanity has placed a new requirement ahead of quantity and quality, namely, "Safety."

3rd. The young engineer who intends to enter the field of machine designing will find it necessary in the future to embody mechanical safeguards into the design, thereby making it unnecessary for the men buying machines to apply makeshift safety devices later on. I believe that it will be impossible in a few years from now to sell a well-designed machine unless careful attention has been given to safety in the designing.

4th. The future industrialists, manufacturers and managers of public service corporations must come from the ranks of our engineering students. It will be, in my opinion, impossible in a few years for an industrialist to succeed unless he is fully abreast with the times in connection with developments in the safety movement.

5th. Safety engineering as a profession will require, in my opinion, thousands of able engineers within the next few years. The demand for such engineers now is much greater than the supply. Within the last three months I have had requests for more than a dozen experienced safety engineers. Four States of the Union have asked for experienced safety engineers to be placed at the head of their factory inspection departments. The salaries offered in these four cases range between \$3,000.00 and \$4,500.00.

I know of a number of fairly good safety engineers with good experience, but little or no college training, who have more than doubled their salaries in the last eighteen months. The time should come, and I hope it is near at hand, when every factory or work inspector in Government or private employ in the United States must be a college graduate safety engineer.

6th. I understand that two Engineering Colleges in the United States have now inaugurated a special course of Safety Engineering, which gives the successful students the degree of "S. E.," or "Safety Engineer," and I hope that others will follow.

7th. To the engineering students who become later on instructors or professors in our institutions of learning, it is very important to keep abreast of the times in the safety movement. Safety and accident prevention should not only be taught in our engineering schools but it should be taught in our correspondence schools and in our public and high schools. It should be part of the program in our continuation schools and trade schools.

At this very moment a committee of my associate officers in the National Council for Industrial Safety is engaged in writing a Safety Primer suitable for instruction in public schools. Such instruction is made obligatory under the recent laws of two States.

Engineering students will find it good policy to devote their summer vacations to acquiring practical safety experience in the same manner in which they have found it desirable in the past to acquire in various other ways practical knowledge pertaining to their future profession during their vacation.

8th. Engineering Schools have been strong factors in developing standards for industrial and commercial life. There is a great new field for these schools for developing "Safety Standards."

9th. Many of our present engineering students will become public men, legislators, senators and statesmen, and to judge from the interest that is being taken by our National and State officials, legislators and public men at the present time in the Safety Movement, it will be well for the future Statesman to have a thorough knowledge of safety. It will not only benefit himself, but it will benefit the State and help us to go along in a progressive, nevertheless sane and understanding fashion.

10th. There has appeared a rapidly growing tendency toward industrial and social unrest in recent years in almost all nations, the United States not excepted. Whatever our belief may be as to the reason for or the result of this, all practical men familiar with the situation are agreed that co-operation which brings together and makes possible conference between employers, employes and the public will have a tendency to bring together the warring industrial factions. Surely all classes and all people can unite in the Safety Movement and by safety meetings indirectly reduce strikes, lock-outs and other visible evidences of this social and industrial unrest. Engineering students will always take an important part among the leading employers and among public men, and we must look to them to take an important part in the equitable adjustment of industrial relations which may bring about lasting industrial peace.

11th. The United States has succeeded in many directions in wresting supremacy away from many of the old world nations. We must and we will make our industries, our farms, our highways, our streets and our homes safer than those of any other nation and we must look to a large extent to our engineering schools to bring this about.



Educational Literature

THE following booklets devoted to the INDUSTRIAL BETTERMENT ACTIVITIES of the National Association of Manufacturers are published for free circulation, and can be procured by addressing General Offices, No. 30 Church Street, New York City, New York, or Chairman, Committee for Accident Prevention and Workmen's Compensation, Springfield, Illinois.

7. LET US SEND THE WHOLE BOY TO SCHOOL.
An address by James W. Van Cleave.
 9. INDUSTRIAL EDUCATION AS AN ESSENTIAL
FACTOR IN OUR NATIONAL PROSPERITY.
An address by James W. Van Cleave.
 22. INDUSTRIAL EDUCATION.
Report of Industrial Education Committee.
 34. INDUSTRIAL EDUCATION.
Report of Industrial Education Committee.
 37. EMPLOYERS' LIABILITY, WORKMEN'S COM-
PENSATION, AND PREVENTION OF WORK
ACCIDENTS.
An address by F. C. Schwedtman.
 38. CO-OPERATION OR———?
An address by F. C. Schwedtman, delivered before
the International Association of Casualty and
Surety Underwriters.
 39. MODEL WORKMEN'S COMPENSATION ACT.
Drafts of the compulsory, also the elective form, of
a compensation bill, with explanatory
introduction.
 40. SAFETY TO OUR WORKERS.
An address by F. C. Schwedtman, delivered under the
auspices of the Toledo Superintendents' and
Foremen's Club, Toledo, Ohio, Dec. 6, 1912.
- INDUSTRIAL BETTERMENT ACTIVITIES.
Booklet showing the scope of the Association's work
in regard to Accident and Fire Prevention and
Industrial Education.

DIGEST OF WORKMEN'S COMPENSATION LAWS FOR 1913.